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## BREEDING THE RED-BILLED BUFFALO-WEAVER

*Bulbalornis niger intermedius*

by Carl Garnham

The Red-billed Buffalo-Weaver has three recognised subspecies - *B. n. niger*, *B. n. militaris* and *B. n. intermedius* - the latter being a comparatively recent classification change, as it was formerly believed to be a subspecies of the White-billed Buffalo-Weaver *B. albirostris*. The author has been unable to trace identification details for the subspecies. (*In the recently published (2005) Roberts - Birds of Southern Africa, Seventh Edition, the geographical variation is described as clinal and slight and largely down to the shade of plumage coloration and mottling on the underparts of the female. Only B. n. niger and B. n. intermedius are recognised, not B. n. militaris, described by Clancey from the Luangwa Valley, Zambia. There are two populations in Zambia (it also occurs in Zimbabwe and other neighbouring countries) and both were considered to be of the nominate form by Benson et al. (The Birds of Zambia, 1971), though it was noted that the Luangwa Valley birds were smaller. Until there is further study to clarify whether or not the variation is well-marked and consistent, the authors have taken a conservative approach and consider B. n. militaris to be synonymous with the nominate form. - Ed.*).

Seen at a distance, the males appear to be black, but when held in the hand, they are seen to be a very dark charcoal grey. They have variable small patches of white on the sides of the breast (the largest usually just in front of the wing butts) and on the flanks, and have white-edged primaries. In breeding males the bill is deep waxy orange or reddish, tipped black, but is yellowish-orange in birds out of breeding condition. The legs and feet are greyish yellow, or pale orange to pinkish or reddish brown.

There is some disagreement in the sources available to me as to the description of the females, not least perhaps because there is an almost total lack of referral of comments to particular subspecies and also due to the comparatively recent inclusion of *B. n. intermedius* as a subspecies of *B. niger*. The females familiar to the author - originating probably from Tanzania and therefore *B. n. intermedius* - are charcoal grey above and white below,



with heavy dark mottling, which is less dense on the throat and belly. The bill is horn-coloured, with a dark tip.

Both sexes are approximately 25cm (9in) long and weigh about 80g. They are long, slim birds, with fairly long tails. Nestlings are probably sexable while still in the nest. Males are probably darker and do not have pale edges to the flight feathers. Information received also indicates that male chicks get an orange tint to their horn-coloured bill approximately two weeks after fledging, though this has not been confirmed.

This species is native to large parts of Africa. The nominate form occurs from northern South Africa northwards. How far northwards it extends depends on whether *B.n.militaris* is regarded as a valid subspecies or as synonymous with the nominate form (see above). *B. n. intermedius* occurs from central Tanzania, northwards through Kenya to southern Somalia, southern Ethiopia and southern Sudan. The Red-billed Buffalo Weaver's preference is for dry savannah and open woodland, particularly if there are large trees - or man-made structures such as telegraph poles or electricity pylons - which can provide nest sites.

A group of 11 birds was obtained during the winter of 2005-2006. The group consisted of two adult males and nine other birds including some which were believed to be immature males, based on the best guesses that could be made from the conflicting accounts in the literature about the appearance of the females.

The birds were initially housed in box cages in an unheated, but frost-free, timber shed until they were seen to be eating adequate amounts of food and a warm spell of weather allowed them to be transferred to an outside aviary. They readily ate my standard softbill diet - soaked and finely crumbled Purina Omega Tasty Original (a complete compound, dog food, containing 23% protein and 10% oil), but sampled very few seeds. When they eventually started eating seed they proved to be extremely conservative in their choice and currently receive a mix of approximately 75% canary seed, with millets, wheat, sorghum, hemp and rape making up the remainder. Substantial amounts of seed are eaten now, in contrast to the White-headed Buffalo Weaver *Dinemellia dinemelli*, which seldom eats seed at all in captivity. As would be expected the seed is de-husked before being swallowed. The birds are fed seed ad-lib and eat approximately 6g dry weight of dog food per day.

The birds were transferred to an aviary 12ft x 6ft x 6ft tall (approx. 3.6m x 1.8m x 1.8m tall) with one end forming a 4ft x 6ft (approx. 1.2m x 1.8m), roofed and enclosed shelter, connected via a pop-hole to the remaining part of the aviary, which was open on all sides. Within the shelter a 12mm (approx. 1/2in) diameter dowel perch some 20cm (approx. 8in) from the aviary roof was provided along the 6ft (approx. 1.8m) length, fitted on the underside of which was an electric soil-warming cable set to come on when the

temperature dropped to 5°C (41°F). A nightlight was also provided.

The outside flight was provided with natural perching and a 50mm (2in) mesh wire netting hammock strung from the roof to form an approximate half-cylinder about 60cm (almost 2ft) in diameter x 90cm (3ft) long. This was provided with a small number of twiggy branches to act as supports for any nest or nests.

Early in May 2006 the colour of the bill of one of the males deepened and he started construction of a stick nest on one side of the netting hammock. Materials supplied consisted of beech and cupressus twigs 2mm-4mm in diameter and 20cm-30cm (approx. 8in-1ft) long. These were intentionally supplied with few forks/as little branching as possible, as construction was achieved by the male threading the twigs into any existing mass by pushing the twig to his side, while held in his bill. If a new twig would not feed into the existing mass, the male would turn it around and try to feed it in from the opposite end.

The first nest was ignored by the females, even though the male frequently displayed with dropped wings and fanned tail, and called loudly. In early June, the same male moved the entire nest from one side of the wire netting hammock, to the other - a distance of only some 40cm (1ft 4in) or so, which took him one day. Two females immediately showed interest and started building within the stick nest using fresh green grass approximately 60cm (almost 2ft) long. Coconut fibre, hay, straw and raffia were all ignored. Although a laurel bush in the flight was substantially stripped of leaves, very few fragments of these leaves were found in the nests.

As more sticks were offered, the nest grew and the second male started to construct a nest on the opposite side of the netting hammock, in the position chosen originally by the first male. In total six grass nests were built, four in the stick nest of the dominant male and two in the smaller stick nest of the subordinate male. As more sticks were provided, and within the constraints imposed by the available support, twig tunnels were constructed to the active nests. They sloped slightly upwards into the nests and were noticeably curved - neither orientation apparently being dictated by available support for the tunnels. The longest measured approximately 60cm (almost 2ft) - sufficient to make reaching the grass nest barely possible.

One clutch of two, three of three and one clutch of four eggs were laid. The eggs, which measured approximately 25mm x 20mm, were off-white and heavily marked with pale grey smudges. Incubation, very unusually for a passerine, started after the first egg had been laid. The first chick hatched June 25th - June 26th, after an incubation period of 11 days. On hatching, the chicks were an intense, vivid pink-orange colour all over. The females sat very tightly and often had to be lifted from the nests to enable inspection to take place. The growth of the chicks, particularly the feet and

legs, was initially very fast and they had to be close-ringed (banded) at approximately seven days old. Closed rings size M (5mm) were used. The nestling period was in the order of 20-22 days.

Due to the number of adults and the number of potential chicks involved, along with the fact that frozen crickets, available in plentiful supply, were ignored, the livefood offered for rearing was frozen blow-fly maggots (pinkies). These were offered several times each day with the birds consuming about  $\frac{1}{2}$  pint (200ml-300ml) a day once there were several chicks in the nests. Unfortunately, when the oldest chick was 14 days old, a batch of maggots contaminated with botulism was provided. The subordinate male and several chicks of various ages died and were found in the nests. Thereafter the livefood was changed to mealworms.

A week later, livefood was not supplied for about six hours, although a generous amount of mealworms had been supplied prior to this. Following this break in the supply of livefood, four chicks were found dead and outside of the nests. A few days later, when livefood was not supplied for approximately three hours, the nests were inspected. The oldest chick, about 12 days old, from a nest of two, was found to be healthy and very much alive, half-way down the tunnel entrance to the nest.

While I do not propose to conduct an experiment to confirm the theory, perhaps this explains the second loss of chicks. It may be that if chicks are very hungry, they leave the nest chamber to meet a returning parent and fall from the nest. If so, this may also indicate why incubation starts following the laying of the first egg. It may be that if there is a shortage of food the strongest and healthiest will get preferential treatment by virtue of getting to the food first.

From the first nests, two birds fledged from one nest, one on July 26th and the other on July 27th. Both were females. Although the male continued to maintain and modify the nest and display, no further eggs were laid until fresh green grass was again supplied each day. Within three days of this, six females had started new clutches.

These eggs hatched but the chicks were slowly lost. As the dead chicks were not ejected from the nests, most were found later in an advanced state of decay, making it impossible to determine the cause of death. All three that could be examined were distended and had enlarged livers. In addition, the remaining adult male was found dead in a nest, presumably having died during the night (as this species roosts in the nest). Post mortem examination revealed a grossly enlarged and congested ureter that had partially blocked the cloaca. Although this was a major contribution to its death, the precise cause was not determined.

Although a single chick fledged from the second breeding attempt, all the others were lost and the single fledgling also died two days later, followed



closely by the, now independent, fledglings from the first breeding attempt. Post mortem examinations were carried out on several birds. All showed enlarged livers and one older fledgling also had signs of infection in several abdominal organs. Four birds were sent for laboratory examination and all were found to have died from toxoplasmosis. This is a protozoan disease similar to coccidiosis in which the protozoan species tends to be very species-specific in what it will infect. As such, it seems inevitable that the disease was and is present in the adult birds. At the time of writing (October 2006), no cure or prophylactic treatment has been identified.

Amongst the original group of birds, one in particular was initially thought to be an immature male as it was substantially darker, but otherwise identical to the remaining birds. The colour and pattern of that bird remain essentially unchanged except that its beak has darkened considerably. With no identification information available to me, it seems very likely that this bird is a female White-billed Buffalo Weaver. This supposition is supported by the fact that it was the only non-male that did not attempt to breed.

### Acknowledgements

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*Carl Garnham is a UK member who lives in Leicestershire.*

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## FOUND ON MOUNTAIN RANGE

On a previously unexplored Colombian mountain range, a team of biologists has discovered a new bird which has been named the Yariguies Brush-Finch *Atlapetes latinuchus yariguierum*. The new bird has a black bill, orangish-rufous crown, blackish face and upperparts and yellowish underparts. It differs from its closest relative in lacking any white markings on the wings.

The expedition which discovered it was funded by the BP (British Petroleum) Conservation Programme, which this year has given 27 schemes from 21 countries US\$475,000 (approx. £250,000) to support research projects aimed at tackling a range of global environmental issues.

The cutting about the discovery of the Yariguies Brush-Finch was sent by Prof. J. R. (Bob) Hodges. Bob said that regrettably old age is catching up with him and he now has virtually no opportunities to meet other aviculturists. He occasionally visits the Cotswold Wildlife Park, where he finds himself spending long periods watching the Scheepmaker's Crowned Pigeons *Goura scheepmakeri* and Great Blue Turacos *Corythaeola cristata*.

## THE FIRST HAND-REARING OF MAURITIAN WHITE-EYES *Zosterops* spp.

by Andrew Cristinacce, Amanda Ladkoo, Elise Kovac,  
Lara Jordan, Anne Morris, Tracé Williams, Frederique de Ravel  
Koenig, Vikash Tatayah and Carl Jones

### Abstract

Island bird species threatened by introduced mammalian predators can be safeguarded from extinction by introduction onto predator-free offshore islands. To minimise the impact on existing populations, threatened nests can be rescued from the wild and chicks hand-reared for release. Using a closely related but common surrogate species can help to refine rearing technique before trials on more endangered species. Four Mauritius Grey White-eyes *Zosterops borbonica mauritianus* chicks were successfully hand-reared to fledging before four Critically Endangered Mauritius Olive White-eyes *Z. chloronothos* were reared, one from hatching. The potential for further development of techniques and future conservation measures are discussed.

### Introduction

Island bird species have accounted for over 90% of bird extinctions over the past 400 years and 39% of threatened bird species are restricted to islands (Johnson & Statterfield, 1990) but recently a number of island bird species have been saved from extinction when appropriate conservation measures were taken (Butchart et al., 2006). Mauritius, in the Indian Ocean, provides well known examples of the problems afflicting remote islands following human settlement. Although 52% of its original avifauna is now extinct (Cheke, 1987a), Mauritius is recognised as part of a biodiversity hotspot in the Indian Ocean (Myers et al., 2004) and intensive conservation management has been used to increase the populations of some of the rarest birds in the world (Jones et al., 1995; Swinnerton, 2001).

The Mauritius Olive White-eye is now possibly the rarest bird on Mauritius and is the only endemic bird species to show a large population decline in recent years. Its population size was estimated at 340-350 pairs in 1974-1975 (Cheke, 1987), but this had fallen to 200 pairs by 1993 (Safford, 1997a). A further decrease to 93-148 pairs by 2001 (Nichols et al., 2004) led to the IUCN classification of Critically Endangered.

The Mauritius Olive White-eye likely faces the same threats from nest predation by introduced mammals as other Mauritian birds (Safford, 1997b; Carter & Bright, 2002) and this has caused low productivity (Nichols et al., 2005). One of the strategies suggested for increasing populations of



Mauritian birds is translocation to offshore islands free of mammalian predators (Safford & Jones, 1998). The most effective way to establish a population of Olive White-eyes on an island is to rescue threatened nests from the wild and hand-rear chicks for release.

Chicks from common but closely related species can be used to develop techniques for the hand-rearing of more endangered species (Kuehler et al., 1996). The Mauritius Grey White-eye is the only native terrestrial bird to have adapted to the arrival of humans on Mauritius. It is widespread throughout the island and the population was estimated at 34,000-68,000 pairs (Cheke, 1987; Safford, 1994). This makes it an ideal species to use as a surrogate for its more endangered congener. This paper describes the first nest rescues and hand-rearing to fledging of both Grey and Olive White-eyes.

## Methods

### Nest rescues

In the 2004-2005 breeding season a nest of two Grey White-eye chicks about three days old was rescued from the wild. The nest was taken whole when the parents were off the nest and was lowered to the ground in a specially prepared tub. It was carried to the nearest road and then driven to the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS) for the chicks to be hand-reared. The whole process took about one hour. The following season a second brood of two Grey White-eyes was rescued at the same stage from an area containing high densities of Olive White-eyes. As this area was further away it was decided to feed the chicks on the journey. The chicks were fed by tweezers immediately after the rescue and every hour thereafter. They were given bee larvae until they stopped begging for additional food.

Later in the 2005-2006 breeding season, following the successful rearing of the Grey White-eye chicks, two threatened Olive White-eye nests were rescued from the wild. The first nest contained two five-day old chicks. These were rescued and fed in the same way as the second brood of Grey White-eyes. The second nest was rescued early because introduced Crab-eating Macaques *Macaca fascicularis* were seen in the area and the nesting pair's previous two nests containing eggs were predated by monkeys. The rescued nest contained a day-old chick and two eggs, one of which had died under the parents. The viable egg was placed in foam in a portable incubator set at 37°C (98.6°F). The chick was also placed in the incubator and fed only one piece of bee larvae on the journey because it still had an obvious yolk sac.

### Hand-rearing

Both species were given the same hand-rearing diet shown in Table 1.

Table 1. Feeding schedule for Mauritius Olive White-eyes and Grey White-eyes.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-19
Temp (°C)	37-36	36-35	35-34	34	33	32	31	30	29	28	27	Not regulated				
Interval s (mins)	40	40	40	60	60	60	60	90	90	90	90	90	120	120	120	120
Times	5.00-21.30	5.00-21.30	5.00-21.30	5.00-21.30	5.00-21.30	5.00-21.30	5.00-21.30	5.30-16.30-21.00	5.30-16.30-21.00	5.30-16.30-21.00	5.30-16.30-21.00	5.30-16.30-21.00	5.30-16.30-21.00	6.00-17.00-20.00	6.00-17.00-20.00	6.00-17.00-20.00
Feed	B	B	B	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B
1	B	B	B	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B
2	B (f)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)	B (n)
3	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
6	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
9	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
12	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
15	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
18	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
21	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg	Beg
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

## Key

B: Bce larvae

vb: Vitamin B

P: Papaya

eg: Cricket gut only

E: Egg

M: &gt; 1 day-old mouse

M\*: &gt; 1 day-old mouse internal organs

Cab: Cricket abdomens

p: Avipro (Vetark Ltd.)

n: Nutrobal

WW: Waxworm

nk: Nekton-Tonic-I (Nekton®)

The chicks were fed by tweezers, mainly on bee larvae, egg and papaya (pawpaw). Young (>one day old) laboratory-bred mice *Mus musculus* were added to the diet from day six onwards. The chicks were fed every 40 minutes for the first three days after hatching and every hour from days three to eight. The interval between feeds was increased to 90 minutes for days eight to 13 and to two hours from day 13 to fledging.

The Olive White-eye egg was placed in an incubator at a temperature of 37.2°C (99°F) and 86% humidity. The chicks were placed in their original nest after it had been treated with 5% Carbonyl powder to remove any mites. The nest was lined with a textured mat and a thin layer of tissue to increase the grip of the chicks and allow easy removal of waste. The two chicks from each nest were reared together and kept in a Marsh brooder between feeds. The temperature in the brooder was gradually decreased as the chicks grew (see Table 1). The chicks were weighed every morning before the first feed and observations on their development were recorded.

After chicks were found outside of the nest on the floor of the brooder, they were considered fledged and were moved into a small cage measuring about 60cm x 60cm x 25cm (approx. 2ft x 2ft x 10in) with a partly covered wooden back and sides. Leafy branches were arranged in the cage to provide a secure, sheltered environment for the birds. Perches of various widths were placed around the nesting tub and at higher elevations in the cage.

The following day the fledglings were moved into a larger cage measuring 1m x 1m x 0.3m (approx. 3ft 3in x 3ft 3in x 1ft). A tube of nectar, fruit on perching branches and bowls of insect mix were placed in the cage. Over the next few days the fledglings were fed less frequently as they began to explore the available food and started to feed themselves. When the chicks were fully weaned, the cage was put into an outside aviary for increasing intervals of time each day until the juveniles were released into the aviary by leaving the door to the cage open.

## Sexing

All four Mauritius Olive White-eyes were sexed at approximately 10 weeks of age. Each bird was caught and two blood samples were taken using a sterile needle to prick the birds' feet above a claw. A drop of blood was collected on paper, sealed in a sterile container and sent for sexing to Molecular Diagnostic Service, South Africa. Biometrics were taken of all four birds including weight, wing chord, tarsus length and distance from culmen to gape.

## Results

All the Grey White-eyes and Olive White-eyes were successfully hand-reared to independence. No major problems were encountered when the



birds were reared from the chick stage. The defecation pattern was irregular for the first few days after rescue and in some cases the chicks were straining to pass faecal sacs. This was rectified by increasing the amount of papaya in the diet and by feeding one chick at a time until full instead of feeding them alternately. The sudden increase in pressure caused by a full crop seemed to stimulate movement of the faecal sac. A clump of cricket eggs was found in the faecal sac of one two-day old Olive White-eye chick. After this only male crickets were fed to chicks.

The Olive White-eye egg weighed 0.994g and measured 1.57mm x 1.15mm when it was rescued from the wild. It hatched the following day at a weight of 0.86g. At two days old the chick was put back in the nest with its sibling, that had been rescued in the same nest at one day old. On day six the youngest chick developed a slight gasp, which worsened after each feed and subsided three to five minutes after each feed. Its begging had become lethargic and its faecal sac became wet, loose and an opaque grey colour. Occasionally the chick would simply hold food in its beak without swallowing it.

The chick was separated from its older sibling in case of infection and was fed smaller pieces of food. In case the chick had developed a bronchial infection a hatcher was set up in which the humidity rings were filled with a solution of F10 disinfectant (Health and Hygiene Ltd) and distilled water in a ratio of 1:125. The chick was placed in the hatcher for 30 minutes three times a day. Two new supplements were added to the feeds: Critical Care Formula (Vetark Ltd) which was given at alternative feeds and Avipro (Vetark Ltd) which was given after each session in the hatcher, as F10 destroys beneficial gut fauna as well as harmful ones.

On day seven the gasping varied from light to severe full body movements and the feeding pattern remained the same as on the previous day. On day eight the breathing of the chick had improved considerably. The beak of the chick had grown quite a bit and the left nostril opening could be distinguished for the first time. This eased the chick's breathing and treatment in the hatcher was discontinued. The chick had fully recovered by day nine and by day 12 was returned to the nest with its older sibling.

### **Development of white-eye chicks**

The development of the Olive White-eyes is described in the Appendix. The development of the Grey White-eyes was similar. The chicks of both species grew very quickly and they spent just 13-14 days in the nest before fledging. The eyes of the Grey White-eye chicks were open at day six, while those of the Olive White-eye chicks did not open until day seven to day eight. In the case of both species, feathers started emerging from day five, breaking at the tips of the secondary pins. Fledging plumage was obtained after 12 days.

The tails of both species were not fully feathered until day 12 and even after fledging remained noticeably shorter than those of the adult birds. The white feathers around the eyes of the Olive White-eye started to unfurl about the fledging time or just after. The exact time varied from individual to individual. The birds of the first clutch had eye rings by day 15 whilst those of the second clutch did not obtain their eye rings until day 27 or day 28.

The daily weight gain was similar for both species (see Fig.1 (p.156) for that of Mauritius Olive White-eyes). Chicks gained weight steadily until about day 10. The weight then remained stable or decreased slightly just before fledging. The chicks weighed about 7g at fledging. At about 11 days old chicks started to perch on the edge of the nest. Their begging response decreased and occasionally they would refuse food. Three Olive White-eye chicks fledged at 13 days old and one at 14 days old. All Grey White-eye chicks fledged at 13 days old. One clutch of two Olive White-eyes was weaned by 21 days old, but the second clutch was not fully weaned until day 28. Both clutches of Grey White-eyes were weaned by 20 days old.

All the fledglings adapted well to aviary life. The Olive White-eyes fed mainly on nectar and also on fruit spiked on branches and showed less interest in the insect mix than the Grey White-eyes. All four Olive White-eyes were sexed and found to be males. The biometrics at 10 weeks of age are shown in Table 2 (below).

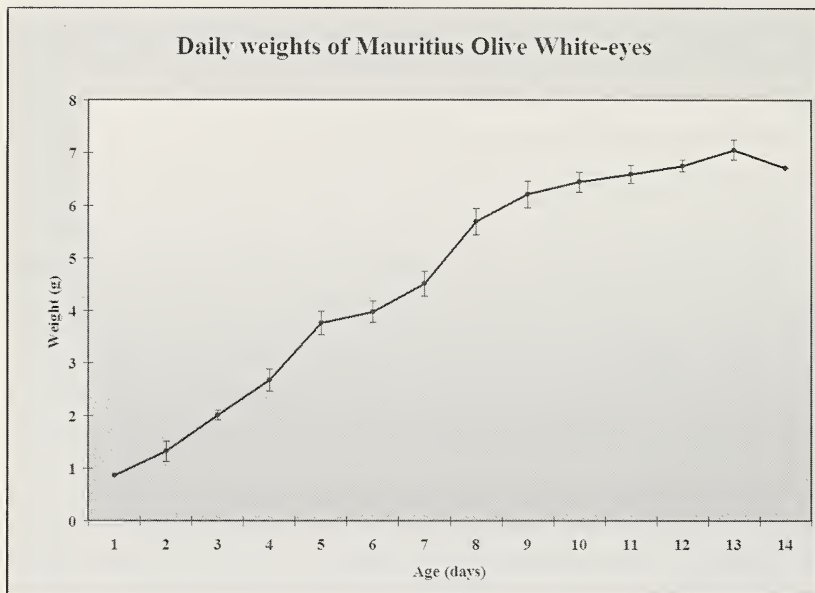
Table 2. Biometrics of captive Mauritius Olive White-eyes.

Bird	Age (days)	Weight (g)	Wing-chord (mm)	Tarsus (mm)	Culmen-Gape (mm)
GA78213	72	9.5	51	20.3	14.9
GA78214	70	9	50	18.6	15.3
GA78215	81	8.5	49.5	19.1	15.6
GA78216	81	9	52.5	19.5	16.4

## Discussion

All the Olive and Grey White-eyes were successfully hand-reared to independence. Rearing chicks from a common but closely related species enabled us to develop techniques and gain experience with small chicks before tackling a critically endangered species. Few problems were encountered during the rearing and most of those were easily overcome. The cause of the problem which affected one Olive White-eye chick between the age of six and eight days is still not known. Although the chick was given emergency care it remains unclear whether this resulted in its recovery. With critically endangered birds, all possible measures should be taken to ensure their survival.

Fig.1. Mean ( $\pm$ S.E) daily weights of Mauritius Olive White-eyes (n=1 day 1 and 14, n=2 days 2-4, n=4 days 5-13).



The chicks of both species grew rapidly and fledged after approximately 13 days. At around fledging time all chicks weighed slightly less than adults, but by 10 weeks old Olive White-eyes had reached the full adult weight. At that stage, wing length was generally 2mm-3mm shorter than that of adult Mauritius Olive White-eyes measured in the wild (Cheke & Jones, 1987). Weaning varied between white-eye species. Both clutches of Grey White-eyes and one clutch of Olive White-eyes were feeding themselves about eight days after fledging. The second clutch of Olive White-eyes took a week longer to be completely weaned. The weaning period after fledging was longer for both species than that recorded for hand-reared Mauritius Fodies *Foudia rubra* (unpublished data) and white-eyes appear to take longer to start exploring their surroundings after fledging (pers. obs.).

The development of the white eye-ring in Olive White-eyes also varied. It appeared around fledging time in one brood, but up to two weeks after fledging in others. Lack of an eye-ring confirms a recent fledgling, but the presence of an eye-ring does not preclude recent fledging. Observations in the wild suggest that tail length may be a better method of distinguishing adults from recent fledglings (Powell et al. in prep.).



## Conservation measures

In future it will be possible to rescue nests from the wild at the egg stage. This will leave nests exposed to predation for a shorter time and the parents will be able to recycle more quickly. Eggs can be safely removed when the vein coverage is 100%. This occurs about two-thirds of the way through the incubation period. The incubation period of the Mauritius Olive White-eye is 13 days (Safford, 1994) so eggs can be taken after nine days. This has already been carried out successfully with Mauritius Fodies (unpublished data).

Juveniles hand-reared from eggs can be used for releases (Kuehler et al., 1995). The optimum release site would be a predator-free offshore island (Safford & Jones, 1998). The island with the most potential for a release of Mauritius Olive White-eyes is Ile Aux Aigrettes, which has already undergone 20 years of habitat restoration. Olive White-eyes have already shown that they can adapt to different environments. They have never been seen to eat fruit in the wild (Safford, 1991; Cheke, 1987), but have readily taken it in captivity.

The four Mauritius Olive White-eyes hand-reared in 2005-2006 will be kept at GDEWS at Black River. This will give some indication of the susceptibility of Olive White-eyes to lowland diseases which could be present on Ile Aux Aigrettes. All wild populations of Mauritius Olive White-eyes are currently found in the uplands of Mauritius. Mauritius Grey White-eyes, Mauritius Fodies and Mascarene Paradise Flycatchers *Terpsiphone bourbonnensis desolata* in the lowlands are susceptible to avian pox and the long-term impact of this pathogen on these species requires investigation (Cheke, 1987; pers. obs.).

Although all the Mauritius Olive White-eyes reared so far are male, it may still be possible to perform captive breeding trials by taking more chicks into captivity. Any captive-bred fledglings can be used to increase the number released in reintroduction programmes (Tweed et al., 2003). It will also be useful to have captive breeding techniques in place as a safety net in case of further declines in the wild population when direct intervention may be more contentious (VanderWerf et al., 2006).

## Acknowledgements

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*Andrew Cristinacce, Amanda Ladkoo, Elise Kovac, Frederique de Ravel Koenig and Vikash Tatayah, Mauritian Wildlife Foundation; Carl Jones, Mauritian Wildlife Foundation and Durrell Wildlife Conservation Trust; Lara Jordan, Anne Morris, Chester Zoo; Tracé Williams, RSPB (Royal Society for the Protection of Birds).*

## **Appendix**

Development of Mauritius White-eye chicks day one to day 15.

Day 1. Eyes: Closed. Head and beak: Four down feathers. Pink/orange beak, pink inside mouth. Yolk-coloured gape flanges. Body: Pink with grey subcutaneous (s/c) pin-feathers on wings.

Day 2. Eyes: Closed. Head and beak: Four down feathers. Pink/orange beak, pink inside mouth. Yolk-coloured gape flanges. Body: Pink with grey s/c pin-feathers in lines on scapulars, flanks and breast. Barely visible pin-feathers along the line of vertebrae. S/c pin-feathers of primaries and secondaries.

Day 3. Eyes: Eye slits visible but eyes remain closed. Head and beak: Barely visible s/c pin-feathers on forehead and and s/c pins on hindneck. Pink/orange beak, pink inside mouth. Yolk-coloured gape flanges. Body: S/c pin-feathers along the line of the vertebrae. S/c lines of pin-feathers on scapulars, rump and from forehead to breast, belly and abdomen. S/c primary and secondary pin-feathers and wing-coverts.

Day 4. Eyes: Eye slits visible but eyes remain closed. Head and beak: S/c pin-feathers on forehead, crown, lateral crown, nape and hindneck. Pink/orange beak, pink inside mouth. Yolk-coloured gape flanges. Body: Pin-feathers emerging on back, scapulars, rump and flanks. Lines of s/c pin-feathers from foreneck, down either side of the breast, belly and abdomen. Primary and secondary pin-feathers and wing-coverts emerging. S/c pin-feathers of tail and legs.

Day 5. Eyes: Eye slits visible but eyes remain closed. Head and beak: Pin-feathers emerging on forehead, crown, lateral crown and hindneck. Pink/orange beak, pink inside mouth. Yolk-coloured gape flanges. Body: Pin-feathers emerging on back, scapulars, breast, belly, flanks, abdomen and of the tail. The primary and secondary pin-feathers also emerging, along with the wing-coverts. S/c pins on foreneck and at top of legs.

Day 6. Eyes: These remain closed. Head and beak: Pin-feathers emerging on the forehead, lateral crown, nape and hindneck. S/c pin-feathers of ear-coverts and sub-moustachial area. Beak orange, with darkening at tip. Gape flanges remain yolk-coloured. Body: Pin-feathers emerging on back, of scapulars, rump, flanks and at the top of the legs. The tail pin-feathers are also emerging, as are those of the foreneck and feathers are beginning to unfurl on the breast, belly and abdomen. The primary and secondary pin-



feathers are also emerging, along with the wing-coverts.

Day 7. Eyes: Slits visible but eyes remain closed. Head and beak: Pin-feathers emerging on the forehead, crown, lateral crown, nape, hindneck, ear-coverts and moustachial area. Beak orange, with darkening at tip. Yolk-coloured gape flanges. Body: Pin-feathers emerging on back, scapulars, foreneck, flanks and legs. Primary, secondary and wing-covert pin-feathers also emerging. Unfurled feathers in tail and on rump, breast, belly and abdomen.

Day 8. Eyes: Semi-open. Head and beak: Pin-feathers continuing to emerge on the forehead, crown, lateral crown, nape, ear-coverts and moustachial area. Unfurling feathers on hindneck. Beak dark orange with grey tip, extending towards forehead. Still retains yolk-coloured gape flanges. Body: Pin-feathers emerging on back. Scapulars, rump and feathers at the tops of the legs unfurling, as are those on the foreneck, breast, belly, flanks and abdomen. Primary, secondary and tail feathers also unfurling. Down developing around vent.

Day 9. Eyes: Open. Head and beak: Pin-feathers emerging on the forehead and crown. Unfurled feathers on lateral crown, nape, hindneck, ear-coverts and moustachial area. Beak dark orange with grey tip, extending towards forehead. Yolk-coloured gape flanges. Body: Feathers unfurling on foreneck, back, scapulars, rump and at top of legs. The tail feathers are also unfurling, as are those of the primaries, secondaries and coverts. Unfurled feathers on breast, belly, flanks and abdomen.

Day 10. Eyes: Open. Head and beak: Unfurling feathers with some sheaths remaining on the forehead, crown, lateral crown, nape, ear-coverts, hindneck and moustachial area. Beak deep pink with dark grey tip, extending towards forehead. Yolk-coloured gape flanges. Body: Unfurled scapulars, wing-coverts, foreneck, breast, belly, flanks, abdomen and rump feathers. Back and tail feathers unfurling. Two-thirds of sheaths on primaries and secondaries still retained.

Day 11. Head and beak: Unfurled feathers on the forehead, crown, lateral crown, nape, ear-coverts, hindneck and moustachial area. Beak grey/black with gape receding and pale yellow flanges. Body: Unfurled scapulars, wing-coverts, foreneck, breast, belly, flanks, abdomen and rump feathers. Back and tail feathers unfurling. One- to two-thirds of the primary and secondary feather sheaths still retained.

Day 12. Head: All feathers unfurled. Body: Most feathers unfurled. A small portion of the sheath remains on some of the primaries.

Day 13. Head: Feathers fully developed. Body: Feathers completely unfurled, with fluffed-up appearance.

Days 14 & 15. Head: White eye-ring pin-feathers beginning to emerge. There is though variation from individual to individual. Body: Full fledgling plumage.

## NOTES ON THE CARE AND BREEDING OF THE TURQUOISE TANAGER *Tangara mexicana*

by Mark Sproule

This article describes the successful breeding of the Turquoise Tanager in an indoor birdroom in Canada. I was able to determine insect consumption up until fledging and also observe that the female incubated from the time the first egg was laid.

### Description

The Turquoise Tanager has a wide distribution in South America east of the Andes extending from Colombia, Ecuador and Perú in the west, Venezuela and Trinidad in the north, and throughout the Amazon Basin. There is a separate population in eastern Brazil from Bahia to Rio de Janeiro that was considered a separate species (see comment by Isler and Isler, p.175 (1999)). Curiously enough *T. mexicana* is not found anywhere near Mexico.

The head and throat and breast are metallic blue. This blue also occurs on the rump and lesser wing-coverts. The rest of the back, wings and tail are black. The centre of the breast, belly and under tail-coverts are a lemon yellow colour. There are five subspecies. Four of these - *T. m. mexicana*, *T. m. boliviana*, *T. m. media* and *T. m. vieilloti* - all have similar coloration and, in particular, a yellow belly. *T. m. brasiliensis*, the subspecies from eastern Brazil, is larger than the others and is distinguished from them by having a white, instead of yellow, breast. A friend of mine who had *T. m. brasiliensis* and *T. m. mexicana*, indicated that their contact calls are different.

Tanagers are rarely available to private aviculturists in Canada, so having been trying for some time to obtain some *Tangara* tanagers, I jumped at the chance when I was offered a 'pair' of *T. mexicana* in late October 2003. Based on the descriptions in Nørgaard-Olesen (1973) and plates in Isler & Isler (1999), I believe that my birds belong to the nominate form *T. m. mexicana*.

### Accommodation

All my birds are housed indoors year-round in a birdroom in the basement. The area of Canada where I live regularly experiences winter temperatures of -30°C (-22°F). The basement has in-floor heating so I can maintain a year-round temperature of 22°C-24°C (71.6°F-75.2°F). There is an electronic air filter running continuously to help clean and circulate the air. When the weather is not too cold I open the windows for fresh air. Humidity hovers around 50%-60%. I have tried using a humidifier to increase the humidity but it did not make a significant difference so I no longer use it. I have a





Adult showing head coloration.

*Mark Sproule*



Adult showing body coloration.

*Mark Sproule*





Eggs laid in nest built in the box of nesting material.

*Mark Sproule*



Chick in nest 11 days.

*Mark Sproule*

separate area that is used to quarantine new birds.

When I first received the tanagers, they were housed in a large cage 4ft x 2ft x 2ft high (approx. 1.2m x 0.6m x 0.6m high) for 60 days quarantine before being moved into my birdroom. I had intended to move them into a large flight that housed a pair of *Zosterops chloris* that over a period of months had shown no signs of nesting, but, when I went to catch them I discovered that they were sitting on three eggs. The only other flight I had available at the time was 2ft wide x 4ft deep x 8ft high (approx. 0.6m wide x 1.2m deep x 2.4m high), so I put the pair in that. The pair immediately settled down. I find that birds seem to feel safer and are much calmer in tall flights in which they can perch above my head height.

The flight has natural branches near the top. Artificial plants provide cover. There is a feeding hatch 4ft (approx. 1.2m) off the ground so that I can feed the birds without entering the flight. I placed an open box full of nest material among the branches so the birds would not have to go down to the ground to collect nest material. I also constructed two nest areas carefully screened by artificial plants.

## **Diet**

The tanagers are fed my standard softbill mixture twice daily. The mixture is roughly one part diced tofu and three parts diced fruit. Ground up Mazuri low iron softbill pellets are added to the mixture. If too much of this is added to the mix it becomes a solid inedible mass. I have tried a number of different pellets but have yet to find one that the birds will eat willingly. The fruit normally consists of a base of ripe pear and apple, to which I try to add a couple of the following: corn, peas, grapes, blueberries, zucchini (courgette), cucumber, peaches and papaya (pawpaw). Once a week I add a scoop of Prime vitamins and a scoop of a calcium/vitamin D<sub>3</sub> supplement - more often when birds are breeding. In the morning they also receive specially prepared sponge cake soaked in nectar. Boiled rice is added to the afternoon feed.

As the birds are kept indoors, livefood is a challenge. I give waxworms, mealworms and mealworm pupae. Some years ago I tried two week-old crickets - the birds loved them but enough escaped and survived that we had crickets singing for months afterwards. Fruit flies present similar problems. I supply the tanagers with a few mealworms or waxworms daily but they show little interest in these when they are not breeding.

## **Breeding**

### **First attempt**

In early March 2004 I noticed that there was nesting material scattered about the floor of the flight. When I checked, I discovered that they had completely ignored my carefully constructed nest sites and instead built a nest in the box of nesting material. The outside of the nest was constructed



largely of burlap strands and the inside was lined with sisal twine. There were two eggs in the nest, the normal sized clutch for tanagers. The eggs were white with brown markings concentrated at the larger end. The eggs measured 17mm x 11mm. I set up a wireless internet video camera, so that I could observe what was happening. These cameras are great, as you can hang them up anywhere and watch on your PC without disturbing the birds. I also use a digital camera to photograph nests - this allows me to easily and quickly examine at my leisure nests that are in difficult to reach locations.

When I checked the nest on March 19th, I discovered that it contained two tiny chicks. They were pinkish with a small amount of pale greyish down mostly on their heads and lower backs. I increased the livefood, providing them with freshly moulted mealworms, mealworm pupae and waxworms. The livefood was sprinkled with Prime vitamins and the calcium/vitamin D<sub>3</sub> supplement. I was concerned because they were mainly taking just a few waxworms and mostly ignoring the mealworms. However, I checked the nest on the 21st, 24th and 28th and found that the young were growing well and figured that the birds must know what they were doing. Unfortunately, I had to go out of town for a couple of days at that point. When I returned the young looked quite well feathered and appeared fine. The next day though, April 4th, both young were dead.

I had been giving the birds commercially produced waxworms and had been leaving them in the container they were sold to me in. I think that they must have been contaminated. I now keep the waxworms on a waxworm growing medium and have had no further problems.

## **Second attempt**

In mid-April the birds tore apart the original nest and began building a new nest in the same location. After watching hours of video, it appears that only the female builds the nest. On April 22nd there was one egg in the new nest and on the 23rd there were two eggs in the nest. On May 6th I checked the nest again and found one chick and one egg. The following day the second egg had hatched giving an incubation period of 14 days. This pattern has been followed with subsequent nests, so I think that the female starts incubation following the laying of the first egg. At least this seems true of this species in captivity. I was again concerned by how few insects were being consumed and decided to keep a record (see graphs). On May 11th I found the smaller (younger) of the two chicks dead on the floor. On May 18th the remaining chick jumped out of the nest while I was changing the food dishes. I replaced it in the nest twice and on the second occasion it remained there. The following day it fledged at 13 days old. It was a dull bluish-black on the back and under the chin, the belly was pale yellow and there were some shiny blue feathers on the head. The rump was shiny blue



similar to that of the parents. At this point the next problem presented itself. The chick could not fly vertically and wound up on the floor. The parents refused to go down to the floor to feed it and each time I tried to put it back



Aged 15 days.

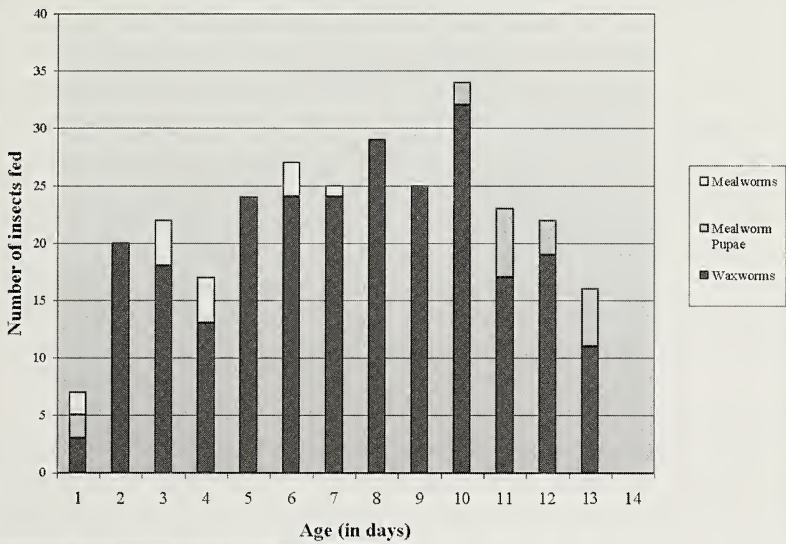
*Mark Sproule*

on a perch, it would immediately wind up on the floor again. I caught up the parents and chick and placed them in a large cage raised about 4ft (1.2m) off the ground. I placed a branch angled so that it touched the cage floor. This seemed to solve the problem. I continued to supply insects but the parents stopped feeding them to the young tanager as soon as it fledged.

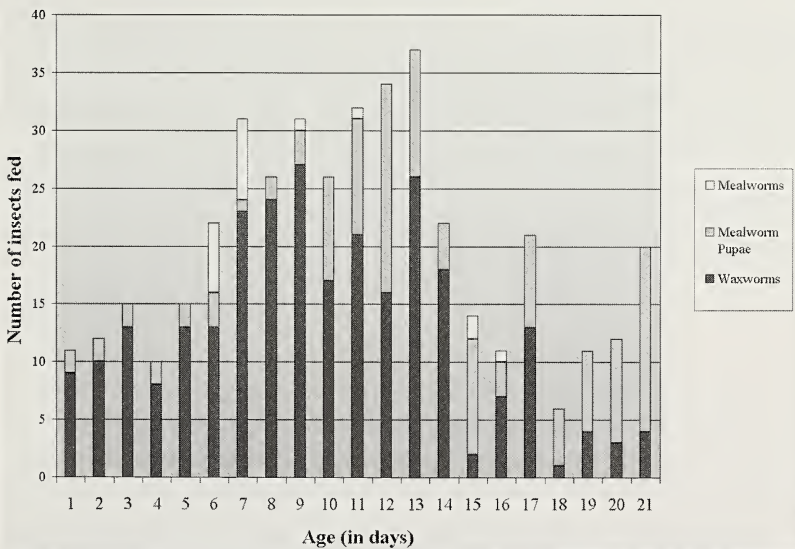
### **Third attempt**

At six weeks the young tanager was almost as large as its parents and was feeding itself. I caught the parents and returned them to the same flight. Within hours they were playing with nest material. This time they re-used the old nest, adding to it just a small amount of new material. On June 26th I checked the nest and found that it contained one egg. I checked again 14 days later, on July 10th, and found that the nest contained one chick and an unhatched egg. On July 11th the second egg had hatched. This supports my

Insect consumption - Nest 2



Insect consumption - Nest 3



theory that the female begins incubation following the laying of the first egg. On July 13th I found the smaller chick dead on the floor of the flight. In the wild I think that these birds normally start incubation once the second egg has been laid and as a result the two chicks hatch at the same time. By beginning incubation following the laying of the first egg, the older chick out competes the younger one. The remaining chick progressed well and fledged on July 25th. Although it was able to fly better than the previous fledgling, I again moved all three birds into a large cage.

At six months I had both offspring DNA feather sexed. The first is a female and the second is a male. By eight months they were in full adult plumage. I was surprised to hear the young male singing, as I have never heard the original male singing. The song is comprised of several contact notes strung together and lasts about five seconds.

## Conclusion

Breeding this species under controlled conditions in my birdroom allowed me to make some observations that would have been difficult to have made in an outdoor aviary or in the wild. I was surprised how few insects were required to raise a tanager chick to fledging, compared to other softbills which will consume as many insects as are provided. It also appears that the female starts incubation following the laying of the first egg. I would be interested to learn if other tanagers do the same thing.

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\* \* \*

## GREAT BLUE HATCHED IN JAPAN

A Great Blue Turaco *Corythaeola cristata* hatched at Inokashira Park Zoo, Tokyo, on or about June 12th 2006. Copulation was noted in April and the birds began to sit on May 13th. The pair arrived at the zoo on December 21st 2000 and is housed in a huge walk-through greenhouse aviary.



## COLLATED DATA ON THE MADAGASCAR FODY

### *Foudia madagascariensis*

by Neville Brickell

Usually known now as the Madagascar or Madagascan Fody but previously and sometimes, at least in aviculture, still known as the Madagascar Weaver. Other names include Madagascar Red Fody, Cardinal, Cardinal Fody, Madagascar Cardinal and, on St Helena, Robin.

#### **Description**

In breeding plumage the male is orange-red or crimson with a black eye-stripe running from the base of the bill to behind the eyes and has black streaking on the back. The wing-coverts have a white edge and the other wing feathers and the tail feathers have yellowish or reddish edging. The bill is black and the legs and feet are flesh-coloured. There is considerable variation in the coloration of the plumage in the non-breeding season. The female looks similar to the male in eclipse (non-breeding) plumage. Her bill is yellowish-brown. The juvenile looks similar to the female, but is paler overall.

#### **Voice**

A fairly vocal species. Has a drawn out, trilling, high-pitched rather metallic “chett chett chett...” song, usually performed while perched at the end of a reed stem or on a branch of a tree; alarm call a sort of shrill “tik tik” (Langrand, 1990).

#### **Distribution**

Madagascar. Introduced successfully onto the Mascarene Islands (Mauritius, Reunion and Rodrigues), the Seychelles (Cousin, Curieuse, Mahé and Praslin), Comoro Islands (Aldabra, Anjouan, Grand Comoro, Mayotte and Moheli), Amirante Islands, Diego Garcia and apparently also established on St Helena, as a result of released or escaped captive birds (Crook, 1961; Long, 1981).

#### **Habitat**

From sea-level up to 2,300m (approx. 7,500ft), in second growth, but avoiding evergreen forest. Also occurs in parks, gardens, rice paddies and timber plantations on Madagascar. On Moheli and Mayotte in the Comoro Islands it occurs in thickets and shady trees (Benson, 1960; Langrand, 1990). According to Penny (1992) it is very common in the lowlands, especially around human habitations, where it obtains food. Haydock (1954) found it in coastal regions and in thickly vegetated areas in the highlands, including in gardens and cultivation.

### Some places it can be seen:

Madagascar	Zoological & Botanical Gardens.
Mauritius	Gerald Durrell Endemic Wildlife Sanctuary (formerly Black River Aviaries); Casela Bird Park; Sir Seewoosagur Ramgoolam Botanical Garden (formerly the Royal Botanical Gardens) and still known simply as Pamplemousses; Natural History Museum.
Reunion	Natural History Museum.
UK	Chester Zoo recently acquired three pairs. These are housed in its Tropical Realm exhibit.

### Behaviour

Found singly or in pairs during the breeding season, but at other times in flocks numbering several hundred individuals in its natural range. Similarly, it has been observed in twos, threes and singly on the Comoros, as well as in larger numbers, e.g. flocks of over 50 have been recorded on Moheli and Mayotte, and of 20 on Anjouan (Benson, 1960; Langrand, 1990).

On the subject of captive birds, Butler (1899) wrote: "I have indeed, never, to my knowledge, lost any birds through the attacks of the Madagascar Weaver, but I have seen a few of them badly scared at times." Bates & Busenbark (1970) wrote: "This is a beautiful though quarrelsome bird" and Fitzpatrick (1989) suggested that any problems of this nature can be overcome by supplying two females to one male, thereby diverting his aggression towards them and relieving the pressure on other aviary inmates. However, according to Kingston (1998), breeding males often accommodating several females, may cause the latter to abandon their nests, due to their relentless pursuit of the females. He achieved good results from a single male and female housed together.

### Feeding

Primarily eats seeds; mostly of various grasses. An examination of the stomach contents of 42 individuals revealed 40 types of small seeds. The stomach contents of nine of the birds also included insects; in four cases relatively small quantities of beetles *Coleoptera* spp. On Mayotte in the Comoro Islands, where this species has been introduced, with the exception of one specimen, the stomach contents contained more livefood than seeds. This survey also revealed that 16 individuals had consumed grit. Spiders, caterpillars (in the breeding season) and occasionally nectar from unidentified flowers have been recorded. On Madagascar and islands onto which it has been introduced, it is a notorious pest where rice is grown. When it is ripening, the Malagash erect small round huts on stilts, to enable them to get a full view over the area under cultivation and use children to drive off the birds (Benson, 1960; Langrand, 1990; Penny, 1992).

Captive-birds can be offered a seed mixture of 10% yellow manna, 35% red manna, 20% Japanese millet, 25% canary seed and 10% white millet. Greenfood can include dandelion *Taraxacum* spp., Dock *Rumex obtusifolius*, Gold-of-pleasure *Camelina sativa*, Milk Thistle *Silybum marianum* and Shepherd's-purse *Capsella bursa-pastoris*. Softfood such as an egg and biscuit mixture is acceptable. Recommended livefood can include crickets, grasshoppers, fly larvae, maggots, mealworms, moths and spiders (Kingston, 1998).



Neville Brickell

Male Madagascar Fody *Foudia madagascariensis*.

### Housing

Suitable accommodation to house a pair or a male and two females, consists of a reasonably sized aviary measuring about 4m long x 3m wide x 3m high (13ft long x 9ft 9in wide x 9ft 9in high). About two-thirds of the flight should be open and the shelter must be damp-free and provide protection from strong winds and driving rain. Tall grass, bushes and small trees can be provided, and the latter may be selected for building the nest in, or they may prefer to nest under cover.

### Breeding

Recorded breeding in September and May, as well as in December on Madagascar; November-March or April on the Seychelles; May or June



Moheli (Comoro Islands) and November Comoro Islands.

Evidently it breeds mainly during the rains. Built 1m-3m (approx. 3ft 3in-9ft 9in) above the ground, the nest is spherical in shape and is loosely twined and woven, using strips of grass and palm leaves. It is then lined with kapok, the white woolly fibres used to stuff cushions and children's toys, etc. These derive from the Kapok Tree *Ceiba pentandra*, that is native to tropical America, Africa and India. Near the top of the nest there is a side entrance, with a short, wide, downward-curved access tunnel. Pollen (in Butler, 1899) stated that nests are sited between two or four branches of Acacia, Mimosa or Tamarisk trees, or at times in reed thickets (Madagascar); it has been recorded nesting in conifers on St Helena.

The slightly glossy eggs are pale bluish-green. On Madagascar there are usually three to five (or occasionally two to four) eggs in a clutch; on the Mascarene Islands (Mauritius, Rodrigues and Reunion) the recorded clutch size is three to four eggs; on St Helena it is two; and in captivity it is two to five eggs (Benson, 1960; Butler, 1899; Fitzpatrick, 1989; Haydock, 1954; Langrand, 1990; Long, 1981; Penny, 1992). The incubation period is 14 days and the nestling period about 18-21 days. Up to three broods a year are possible under suitable conditions (Kingston, 1998; Rutgers & Norris, 1977).

### Life expectancy

May live to an age in excess of seven years (Fitzpatrick, 1989).

### Hybrids and mutations

Benson (1960) suggested it may be that the Comoro Fody *F. eminentissima* and the Madagascar Fody have different breeding seasons and this assists in preventing hybridization in the field. However, in a report on the African Bird Club Conservation Fund Awards for 2005, the writer (Anon., 2006) referred to Hugh Doulton's interim report on the expedition to the Comoro Islands and noted that on Grand Comore and Anjouan the Madagascar Fody and the closely related Comoro Fody were not distinguished in counts as they are known to interbreed frequently. Australian aviculturist Russell Kingston (1998) stated that cross-breeding between the two species is a serious concern in his country.

The first recorded breeding of the Madagascar Fody in the UK, was by J.G. Leeming in 1850 (Coles, 1986). Robin Restall (1975) noted that it had apparently been bred in Germany and France and that in Jean Delacour's aviaries a male had mated with a female Half-masked (Vitelline Masked) Weaver *Ploceus vitellinus* in 1910 and 1911. They bred in a nest box and reared three young, two of which were females and quite similar to the female Madagascar Fody; the male, when two years old, developed a pale

orange creamy colour. Robin had noted earlier that xanthochroic specimens of this species occasionally crop up in which the bright red is replaced by bright yellow. In the yellow mutation the male and female are said to be identical in breeding dress and to require surgical sexing or DNA testing in order to be paired.

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# MEMOIR, NOTES AND ANTHOLOGY ARISING FROM A VISIT TO BRAZIL

## Part 1

by Brian A. G. Hill

It was my first visit to Brazil, in fact my first visit to any South American country. I was there from the first week of November 2005 to the third week of February 2006.

Here I relate my observations of the visit chronologically, hence mixing observations of aviary birds at zoos, with those of birds that, though not confined, were living in close association with the human population, again in zoos or in public parks, or the general environs of the cities and towns I visited. Unless I qualify my observations by stating a bird or birds I watched were in an aviary, or even that I watched them from within their aviary, it should be assumed they were full-winged and at liberty to come and go as they chose, or in the sort of intermediate state of having been pinioned to confine them within the grounds, though not within an enclosure.

Apart from my journey by boat from Belém to Manaus, five days and nights in total, but with a stop-over about mid-way for some days at Santarém and its environs, I did not make any excursions to what might be considered really wild country, i.e. remote from substantial human settlements.

Preparatory to my visit, I read that classic of natural history *The Naturalist on the River Amazons* by Bates (1854), who will feature much in my narrative. Bates started and finished his much more extensive visit to Brazil at Belém, which at that time was known as Pará, now the name of the Brazilian northern frontier state in which Belém is situated. Besides Bates's classic, I also took along the 1982 soft-cover edition of de Schauensee's *A Guide to the Birds of South America*, even though it is not really suitable for use in the field. There are not even the briefest notes on how the birds appear and move (the 'jizz') or any description of the vocalizations. It is essentially a systematic catalogue, as if done from museum skins. I would though refer members to it for descriptions of the plumage/s of the birds mentioned in this report. I have tried to breathe some life into his descriptions, by relating cameos of their behaviour as I observed it.

### Belém

Belém therefore was where I commenced my visit, and where I was for all of November and December 2005, apart from a couple of excursions, for a few days apiece, to no great distance away.

There were two locations I visited frequently, which had birds and other animals in captivity, or at liberty in their grounds. The first, Mangal das



Garças (MDG), is an open site, almost devoid of trees of any size (yet). It adjoins a military establishment, the grounds of which are park-like, i.e. with close-mown lawns and sports pitches, and with a scattering of biggish trees, some of which retain dead branches, so beneficial to many birds, as perches uncluttered by foliage and therefore allowing an all-round view; while those that are stout enough also offer nest sites. Mangal das Garças is meticulously maintained and policed. Even if this observation is not reiterated, the reader can assume it to apply to all the other zoos and parks generally that I visited in Brazil.

Mangal das Garças features a number of diverse attractions for the general visitor, but for the purposes of this report it is the birds which occur there which are most relevant.

The management policy seemed to be to allow most of the birds which were living wild in its environs to fly to and fro as they choose. Some other birds were also allowed free-range in the grounds, but because they were not of common occurrence in the municipal environment, at least some of them, if not all, were pinioned. The third category of birds were those confined in aviaries, which at Mangal das Garças are big and can be entered by the visitors.

As might be expected for a park adjacent to a river (the Rio Pará), it has a few small lakes. In the shallows of these lakes and on the surrounding lawns at the time of my visit on November 5th, there were many Great Egrets *Casmerodius albus*. They were more numerous there than anywhere else I have seen them. They were especially concentrated at Mangal das Garças when fish and other food was being put out. They outnumbered the also quite numerous pan-American Snowy Egret *Egretta thula*, which at a glance is much like the Eurasian Little Egret *E. garzetta* and may be its American ecological equivalent.

On another lake nearby - much of its surface densely covered with water hyacinths - were a few Neotropic Cormorants *Phalacrocorax brasilianus*, a species intermediate in size between the common Cormorant *P. carbo* and the Pygmy Cormorant *P. pygmeus* of south-east Europe and Asia Minor, though from its apparent liking for shallow, calm water in which to fish, it is more akin ecologically to the latter.

The above egrets and cormorants were full-winged and free to come and go. I was less sure about the flock of Scarlet Ibis *Eudocimus ruber*, as I never saw them in flight on any of my numerous midday visits, though if they were full-winged, they may have flown early in the morning or in the evening.

A quite different ambience attaches to the Museu Paraense Emilio Goeldi, the other main location I frequently visited. A couple of miles (kilometres) or so up river, it occupies only more or less one city block and contains, for

example, the type specimen of the tree, Guajara *Chrysophyllum excelsum*, which was already adult by the late 1800s.

Bates returned to Pará (Belém) on March 17th 1859, after an absence in the interior of seven and a half years. In terms of organisation, efficiency and amenities he found the city much improved. However “the expenses of living had increased fourfold ...” and “the noble forest-trees had been cut down, and their naked, half-burnt stems remained in the midst of ashes, muddy puddles, and heaps of broken branches.” Although Bates left Pará (Belém) for England on June 2nd 1859, never to return, his concern was addressed by the naturalists Penna and Goeldi. As a result the city has “one of the most important scientific research institutions in the Amazon. Dedicated to studying Amazon man and his physical environment, it has a zoological and botanical garden, in addition to a permanent exhibit of ethnographic objects of various Amazonian Indian peoples” (Anon., 2005).

Going through the turnstile at the main entrance a visiting European, such as myself, enters a sample of a novel environment - South American equatorial rainforest. The luxuriant vegetation ranges from lowly herbs to towering giant trees. It was mostly the diversity and density of the woody plants which, after merely a few paces from the entrance, muffled the din and extinguished the glare of the surrounding streets. So that entering this natural edifice dedicated to nature, was like entering a cathedral.

Disporting themselves around a pool were one or two White-necked Herons *Ardea cocoi*, one of which was standing near a Rufescent Tiger-Heron *Tigrisoma lineatum*. The latter lived up to the notoriety popularly attached to the ‘Tiger *Panthera tigris*’ by posturing aggressively towards the heron, which attempted to escape by flying up on to the apex of the facade of a small neoclassical Greek-style building, where it was thereupon pursued by the Rufescent Tiger-Heron. Sharing the same enclosure, but not getting involved in the dispute, were some Black-bellied Whistling Ducks *Dendrocygna autumnalis*. I am unsure whether or not they were pinioned. They should not have been, because they were surrounded by, albeit a sample, of the habitat they need. Unless, of course, it was feared that they might stray out into a human environment that was dangerous for them, which I doubt. I was impressed by the benign attitude which seemed to prevail towards birds in Belém and other Brazilian cities.

On a visit on November 11th, whilst viewing some of what seemed to be the comprehensive collection of tortoises and turtles, a Green Iguana *Iguana iguana* fell from quite high overhead or threw itself off a branch, or else one of these gave way whilst it was scrambling from bough to bough. It hit the enclosure’s iron balustrade railing I was leaning against and landed almost at my feet. It appeared unharmed and I was able to take two photos of it before it ambled away into cover.

Another enclosure contained a pool in which were some Amazonian Manatees *Trichechus inunguis*, which a little earlier had received their ration of vegetation to munch, as if they were the aquatic equivalent of cows in a stall. The agoutis *Dasyprocta* spp. were tame enough to be allowed free-range within the bounds of the Museu Paráense Emilio Goeldi. Although they allowed themselves to be photographed at close range, it seemed they could become nervous and suddenly bolt. Even a heavy rain shower caused them to do this during one of my visits, and they exhibited a remarkable turn of speed.

One day I made a short excursion out of the city, downstream to the nearby village of Icoaraci, another of the places visited by Bates. Even then it had thriving saw-mills and today is known for its pottery. On the day of my visit, November 14th, the local newspaper predicted a maximum temperature of 34°C (93.2°F) and a minimum temperature of 24°C (75.2°F) for Belém. Icoaraci though had the advantage of a pleasant breeze accompanying the incoming tide at about 10.00am that day. At a bar overlooking the small beach, I got into conversation with an expatriate Caribbean fisherman, who seemed to know not only the local coast, but also far beyond. Our conversation ranged over many topics, one of which was the local birds, and inevitably the Black Vultures *Coragyps atratus* featured, because there were some in view whilst we chatted, and they abound in Belém. He thought the local birds nested “somewhere in the bush”, but even if they nest in thickets, these are presumably secluded enough for these ground-nesting birds. He went on to say that when one of them dies its corpse remains uneaten by animals (by which I suppose he meant higher animals) and just desiccates and rots away, otherwise ignored. As to their nesting, judging by their numbers and familiarity with people in Belém, I think they may also nest within the city, perhaps in some of the uncompleted and as yet unoccupied 20-30 storey high-rise buildings and perhaps also in cavities in some of the big, old buildings.

Here I digress and jump ahead of my chronology to comment, I hope interestingly, on his remarks about the American Black Vulture's untouchability. When I got back to my home here in Greece, I turned up an article on Western Hemisphere vultures in *Purnell's Encyclopaedia of Animal Life*. In Volume 6, pp.2502-2503, is a double-page spread showing vultures resting on a sandy beach, adjacent to dense shrubby growth. The caption states that the birds are Turkey Vultures *Cathartes aura*, but the bare skin on their heads and necks is greyish black and they have short tails, meaning of course that the caption was incorrect and the birds were in fact Black Vultures. I took a similar photo of a flock resting on the wide sandy beach at Caripy, near Belém, of which more later. The article included the interesting statement that: “Turkey Vultures are immune to the deadly



botulinus toxin which must be a hazard to most carrion eaters.” Assuming this statement is also applicable to the Black Vulture, much of what the old fisherman told me could be quite valid.

“An anaerobic bacterial organism, *Clostridium botulinum* Type C, produces a very powerful exotoxin that is responsible for a serious type of food-poisoning in many species of animals, including birds and man. The toxin is formed outside the body of the bird when the anaerobe grows in stagnant shallow ponds or pools. *C. botulinum* multiplies rapidly in water containing decaying vegetation, dead fish, and particularly large quantities of dead insect matter; slight alkalinity of the water and high temperatures aid multiplication, so that outbreaks occur most frequently in the summer months. Ducks are most frequently affected, so much so that the disease is called ‘duck sickness’. The disease however is not confined to ducks, and to date (1964) species of birds belonging to 21 families are known to be affected with botulism. Under suitable conditions very large outbreaks of botulism occur, and it has been estimated that in one outbreak in Oregon a million birds died and that between one and three million birds died at Great Salt Lake in 1929.” (Jenings, 1964).

In recent years near my home here in Greece, it has occurred at a lake which has expanses of shallow water overlying a deep accumulation of mud, subject in usual summers to heat which in June-July can be as intense as that in the tropics. Because of the usually cooler summers in the UK it is rarer there. The antidote is to have less mud and decaying matter and deeper water with enough flow to prevent stagnation.

In the Birds of Prey Issue of the *Avicultural Magazine* Vol. 87, No.4, pp.212-215 (1981), there was an interesting article by Caryn Schrenzel on breeding and hand-rearing the American Black Vulture at Lincoln Park Zoo, Chicago, Illinois, USA. Lincoln Park Zoo received an adult pair of American Black Vultures in September 1962 and kept the pair in an open enclosure during warm weather and transferred the pair to a closed, heated den 10ft x 6ft x 6ft (approx. 3m x 1.8m x 1.8m) during the winter. This procedure of moving the birds twice a year continued until spring 1976 when it was decided to open the den, giving the pair access to an open flight measuring 20ft x 20ft x 20ft (approx. 6m x 6m x 6m).

After almost 14 years and another winter had gone by, during which no breeding ever occurred, an egg was found in a corner of the den on July 5th 1977. This egg was part incubated in an incubator and 41 days later the chick was heard tapping inside the egg, but two days after that, no sound could be heard coming from this or a second egg. Both were found to contain fully-formed dead chicks. Another clutch of two eggs was laid in late September. The first egg hatched 41 days after being discovered. A few days later the chick disappeared and the second egg was found broken.

Eggs were found again the following year on February 25th and 26th but these were found broken on March 11th. Eggs were found again on April 24th but one was broken and the other was infertile.

Later that spring two further eggs were laid, the smaller of which was retrieved and placed in an incubator. That egg pipped on July 4th. The chick was almost fully feathered at 10 weeks and on November 1st, at about four months, was put in an outside den. The article shows how the captive breeding of a bird such as the American Black Vulture, which is so abundant in many cities and towns of South America, can be quite tricky and by no means straightforward. Much can be learned though trying to propagate such species in captivity.

Mid-November visits to the Museu Paráense Emilio Goeldi were memorable for offering close viewing of a few representatives of the Ramphastidae family. I viewed a White-throated or Red-billed Toucan *Ramphastos tucanus* in its aviary and also a Keel-billed Toucan *R. sulphuratus*, both of which I photographed at close quarters, though separated from them by the aviary mesh. Having nothing further to report from Museu Paráense Emilio Goeldi and Mangal das Garças for the week November 17th-November 23rd, I will move on and report on the pigeons, sparrows and parrots of the city.

Feral Pigeons *Columba livia* dom. are not excessively numerous. The most I ever saw together was 10 and that was on only a few occasions, more often it was not as many as that. In appearance they were just like a corresponding ensemble in a European city, being a similar mix of colour varieties and about the same size. Even though the Portuguese had been at Belém since its foundation in 1616 by Francisco Caleira Castelo Branco (its strategic location at the mouth of the rivers Amazons enabled the Portuguese to defend this vast and bountiful region from foreign invaders), Feral Pigeons were not present before about 1860, otherwise Bates would surely have mentioned them, for he was too broad-minded a naturalist not to have done so. I think their introduction resulted with the coming of steamships, just about the time Bates left to return to England, and with the greatly increased rate of immigration, mostly from Portugal, Spain and Italy, which these ships facilitated. The arrival of the Feral Pigeon in South America was an inevitable consequence of its colonisation by Europeans, most of whom must have wanted these birds in the cities they founded. Since then I think the morphology of the Feral Pigeon has been maintained by recruits, intentional or not, from Europe, facilitated by huge container-carrying ships from places such as Hamburg in Germany, which is apparently the home port of a big operator. They sail as far up river as Manaus, if not beyond.

One morning I got a brief view of a falcon which used the cover of the Forte do Presepio to dash down to the fish dock, on which a few Feral

Pigeons habitually gathered. According to the book it could have been a Peregrine *Falco peregrinus*. Similar remarks apply to the House Sparrows *Passer domesticus* as to the Feral Pigeons. There were not many and I never came across a mass roost as one can in many European countries. Such roosts can be found in just about every city, town and village in Greece.

I strolled many times along the dockland road because it had less of the bustle of the city centre and had enough free-standing fig trees offering cover for birds and providing me with shade from the midday sun, but disconcertingly it also provided cover for some individuals who were intent on trying to steal from those they perceived to be easy victims, on a road very little frequented by pedestrians. One such was the youth who came at me with a knife, but whom, because I threatened retaliation, ran off.

There were some food processing factories nearby and there were several Common Ground Doves *Columbina passerina* searching for food; as sparrows might. I had actually seen this species earlier, just outside the terminal buildings of Belém Airport. I had at the time though just landed following a 10-hour flight from Frankfurt-am-Main, in what felt like a chilly, over-refrigerated cabin, and emerged into the glare, heat and humidity of equatorial Brazil, so will I hope be excused for not immediately recognising this diminutive dove on that occasion.

There were lots of *Brotogeris* parakeets, even in the busiest parts of the city. They were though hidden in the dense canopies of the massive mango trees, which with some other equally, or even more massive, amenity trees, are such a feature of the city. I never saw in this city, nor in any other city or town I visited in Brazil, any evidence of the butchery of municipal trees, which the tax-paying public in some European cities is conned into accepting, because it is euphemistically passed off as "tree surgery". Massive trees are appreciated, at least in the cities of Brazil, not only as cover for wildlife, such as birds, but also because they provide much needed shade from the midday equatorial sun. In the city centre I never got a view of the *Brotogeris* parakeets, but their shrieking calls made passers-by aware of their presence, as doubtless, they fed on ripe mangos and also perhaps on insects attracted to the fruits.



## BOOK REVIEWS

### TURACOS

*Turacos - a natural history of the Musophagidae* was published originally in a large format and very expensive limited edition, now there is a smaller, and hence more affordable edition of this major monograph from the Forshaw and Cooper partnership. It contains the same combination of thorough, informative text and superbly painted plates that we have come to expect from this experienced and talented team.

The introduction provides a good overview of the relationships, distribution and natural history of the turacos. This is followed by a chapter on turacos in aviculture contributed by Robert Berry, who established, and William Todd who continued, the successful turaco breeding programme at Houston Zoo, Texas. The chapter begins with a brief account of early breedings in the UK and France recorded in the *Avicultural Magazine*, and goes on to summarize later successes in the USA, UK and Europe up to the 1970s, as various species became more available. Advice on general husbandry, housing, breeding and feeding is sound, based as it is on the authors' experiences at Houston Zoo. There is an interesting section on captive status, but though this mentions the formation of the International Turaco Society, it otherwise focuses largely on zoos, inevitably perhaps as ISIS provides the only readily accessible and regularly updated source of information on international captive populations.

The species accounts provide a detailed summary of published information, very much in the *Parrots of the World* mould, and are accompanied by William Cooper's accomplished plates which, again as in previous titles, depict adults perching, displaying or feeding on and among plants and landscapes typical of their habitats. The birds were painted from individual museum skins, in addition to which the artist also travelled extensively in Africa to study his subjects in life, and the text is liberally illustrated with half-tone drawings showing birds engaged in a range of natural behaviours, both in the wild and in captivity. The colour plates are superb, not only in bringing the birds to life through naturalistic poses and settings, but also in capturing accurately the range of metallic purples, blues and greens which feature on the wing coverts and tails of many species. A small criticism is that the Great Blue Turaco appears to have more delicate legs than I remember. The text in the species accounts is organised under the headings: Description, Distribution, Movements, Habits, Calls, Feeding, Breeding and Eggs. For many species, the section on breeding draws heavily on accounts of captive breedings, and the *Avicultural Magazine* features prominently in the list of references.

All in all, this is a well-executed and produced book which will be enjoyed by turaco enthusiasts and those who appreciate fine bird books. If I have a reservation it is that the format makes it neither compact enough nor cheap enough to find a home among the general run of bird books, yet it is not large enough to have the same appeal as an impressive coffee table book.

*Turacos - a natural history of the Musophagidae* by Joseph M. Forshaw, illustrated by William Cooper, 223 pages, is published by Nokornis Editons PTY Ltd., Victoria, Australia. Tel:+61 3 9486 1756/Fax:+61 3 9482 3573/Website:www.nokomis.com.au /E-mail:nglavish@nokomis.com.au. Price A\$230.00 (approx. £92.25 or US\$181.50, plus postage).

**Nigel Hewston**

## THE PARROT COMPANION

*The Parrot Companion* by Rosemary Low provides new owners and would-be owners of parrots with advice regarding what to look out for and what to try to avoid. As Rosemary states, some parrots can live for a long time and possibly outlive their owners, if looked after correctly.

The book is divided into nine chapters and has some really nice colour photos, showing what the different parrot species look like. Rosemary offers sound advice as to what to expect from different types of parrots, when it comes to noise, suitability as pets, and size. The 192 pages cover just about everything that one needs to know and answers a lot of questions regarding owning parrots, rearing parrots, and suitable housing for these birds.

It then moves on to what one will need and what to buy in the way of suitable toys, a good cage that will be its home, with cage bars and spacings explained, as well as the various types of food containers, water drinkers and perches etc. The next chapter explains how to introduce your parrot and help it become a family member, with things to do and things that you should not do explained. There is a chapter on how to avoid problems such as biting, feather plucking, screaming, and possible ways to cure these problems. Then there is a chapter on basic training, a must for any pet parrot, with the author explaining how to go about this important aspect, such as training the bird to step up and step down, plus explaining clicker training and what you should not do.

In the chapter on feeding, Rosemary sets out to explain which foods are good and which foods are bad for pet parrots. There is information on fat content, protein, carbohydrates, calcium and much more about the types of food that are available. A lot of detail is given on the various nuts suitable for parrots, as well as fruits and vegetables and other foods.

Towards the end of the book there is a chapter on health and beauty, which explains how to look after your bird's health and the early detection

of ill-health. It also points out the types of things birds should not be given to play with so as to avoid problems such as metal poisoning. The final chapter deals with re-homing parrots. I sometimes wish people would read this chapter first, as it would possibly help some parrots to remain with their owners.

This is a very good book for those about to embark on the road to becoming a parrot keeper, as well as for those that want to try to improve their parrot's life.

*The Parrot Companion* by Rosemary Low, which covers caring for parrots, macaws, budgies, cockatiels and more, has 192 pages and numerous colour photos and other illustrations. It is published by New Holland Publishers (UK) Ltd., 86-88 Edgware Road, London W2 2EA. Price £12.99. It is available from all good book shops, online booksellers and by mail order from LBS on: 01903 828503.

**Cliff Wright**

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## DO YOU KEEP EITHER OF THESE SMALL DOVES?

Jerry Fisher

Most aviculturists are familiar with the Diamond Dove *Geopelia cuneata* which is now domesticated and of which almost inevitably colour varieties have been established. Fortunately there exists a ring-fenced, small group of pure normal-coloured Diamond Doves, and if anyone is interested in helping to maintain this group, they should get in touch with us (see below).

The Namaqua or Cape Dove *Oena capensis*, which until recently was still being imported into the UK, is a different proposition. Unless there is a concerted effort by small dove enthusiasts, this delightful bird could be lost to aviculture, if the current import restrictions remain. It is quieter and even steadier than the Diamond Dove and its behaviour and care are very similar. Surprisingly, both species will cohabit peacefully in a reasonable sized aviary.

Losses of recently imported Namaqua or Cape Doves could be high and they have a reputation for being delicate which, until last year, I regarded as fully justified. Then, in January 2005, I saw two pairs and their offspring living happily in outside aviaries, protected from the elements only by a layer of bubble-wrap. Admittedly it was in Cornwall, but I later discovered that Alan Ollerenshaw had been breeding them outdoors for a couple of seasons in Nottinghamshire.

My own birds (acquired from Cornwall) have bred this year in a heated shelter connected to a flight in which they spend most of their time and in which I am sure they would breed if I let them. I have received information from New Zealand that this dove has been bred there using a colony system.

Here in the UK we now have a nucleus of fully acclimatized captive-bred birds and Alan and I are anxious to build upon this and assemble a small group of aviculturists committed to establishing a captive-bred self-sustaining population of Namaqua or Cape Doves in the UK. We are, of course, also keen to hear from anyone who is already breeding this species.

We are seeking people who are prepared to make a simple but serious commitment to keep accurate breeding records (the base population has good genetic diversity) and to retain birds they have bred until the end of the season for disposals and exchanges within the group. Only then will any surplus birds be put on the open market and group members will, as far as possible, be expected to keep track of them.

Colony breeding is a medium-term possibility, but only appears to work successfully with proven bonded pairs - which is another reason to keep track of as many pairs as possible.

There is another area with which assistance would be much appreciated.

We do, of course, occasionally experience losses of adult birds and part-grown chicks. Given that we are private aviculturists of modest means the cost of detailed post mortem examinations of each bird lost would be prohibitive. Nevertheless we are concerned that as a consequence we may be missing clues that could help us improve our husbandry of these birds - especially if trends develop over a number of deaths. Therefore, if anyone can offer veterinary support in this area it would be greatly appreciated. Should this embrace the involvement of a professionally managed collection in the breeding programme so much the better.

In due course I hope to assemble a comprehensive article on the Namaqua or Cape Dove based on direct experience and published information, but more extensive experience with this species is required before this can be undertaken.

If you are interested in the above and have suitable facilities and are prepared to make a commitment for 2007, involving one or more pairs, Alan and I would like to hear from you. Please bear in mind that the Namaqua or Cape Dove is an inoffensive species that is easily bullied, so suitable aviary companions for it must be chosen carefully.

Further information is available from Jerry Fisher in Devon (Tel: 01803 528561), Alan Otterenshaw in Nottinghamshire (Tel: 01623 465198) or Paul Boulden (E-mail:Paul@pboulden.fsnet.co.uk)

\* \* \*

## US BANK ACCOUNT

Those who would prefer to make payments in US dollars are reminded that the society also has a US bank account. Overseas membership for 2007 will remain at US\$38 for receiving magazines by regular mail or US\$50 for air mail. Checks and money orders should be made payable to The Avicultural Society and sent to: The Avicultural Society, c/o Jane Cooper, 12650 Hearst Road, Willits, California 95490-9231, USA.

## NEWS & VIEWS

### EVENTUAL TOTAL

An eventual total of 11 Green Aracaris *Pterglossus viridis* were hatched this year at The Dallas World Aquarium (website: [www.dwazoo.com](http://www.dwazoo.com)) all of which fledged. Two of the clutches were parent-reared, one by a pair the female of whom had already hatched a clutch earlier this year and who herself was hatched at the aquarium in 2005. Two of the five female Guianan Cock-of-the-Rocks *Rupicola rupicola* (with six males) which Josef Lindholm works with were nesting (at the time he wrote), though no eggs had yet been laid. The group of three male and seven female Andean Cock-of-the-Rocks *R. peruviana* in the care of his wife, Natalie, also includes two nest builders. Other cotingas represented in the collection are: Spangled Cotinga *Cotinga cayana*, Purple-breasted Cotinga *C. cotinga*, Bare-necked Fruitcrow *Gymnoderus foetidus* and Purple-throated Fruitcrow *Querula purpurata*.

\* \* \*

### TEN A YEAR

On my most recent visit (October 2006) to The Eden Project (website: [www.edenproject.com](http://www.edenproject.com)) at Bodelva, St Austell, Cornwall, I failed to see or hear the white-eyes *Zosterops* sp., introduced into the Humid Tropics Biome to help control insect numbers. On enquiring though, I was assured they are still there, are Sulawesi White-eyes *Z. consobrinorum* and about 10 have been bred each year since 2001, thereby maintaining a more or less stable population.

\* \* \*

### RARE DOVE BRED FOR THE FIRST TIME

Two White-throated Ground Doves *Gallicolumba xanthonura* have been bred at Louisville Zoo in the USA. The first hatched on October 17th and the second was hatched by the same pair on December 1st. It is believed to be the first ever captive breeding of this rare Micronesian ground dove.

Curator of Birds Gary Michael, who developed the environment which was conducive to the breeding success in the zoo's Forest Bird Trail Exhibit in the Islands Pavilion, is thrilled with the success. Breeding the White-throated Ground Dove was a goal of the Micronesian Avian-Conservation Program, in which Louisville, Memphis and St Louis Zoos, the US Fish and Wildlife Service, Micronesia's fish and wildlife officials and the Association of Zoos and Aquariums (AZA) all cooperate.



## GOOD AND BAD NEWS

Since 2002, Fort Worth Zoo, Texas, has bred 27 Lesser Flamingos *Phoeniconaias minor*, from a breeding group consisting of only 18 adults. Mirrors on the walls create the illusion that the birds are members of a much larger group. In addition, heat lamps and pools of water create a tropical atmosphere and timed lighting produces 14-hour days.

Recently *The Times* (October 21st) reported that an international rescue mission, headed by the Wildfowl & Wetlands Trust, has been set up to try to "save" the Lesser Flamingo in Kenya and Tanzania, where 100,000 birds have died this year. It has failed to breed there for the past seven years.

\* \* \*

## SEEN ON REMOTE LAKE

Nine adult and four recently-hatched young Madagascar Pochard *Aythya innotata* were seen on a remote lake in northern Madagascar by conservationists from The Peregrine Fund Madagascar Project. Feared to possibly be extinct, this white-eyed, diving duck, had not been seen since 1991, when a male was captured on Lake Alaotra in central Madagascar and kept at Antananarivo Zoological and Botanical Garden until its death a year later.

Cecil Webb visited Lake Alaotra to collect waterfowl in 1929 and 1935 and in 1939 was about to set off again for the lake when over the radio he heard Neville Chamberlain declare war. On the first occasion he set off for the lake with Jean Delacour, who was leading an Anglo-Franco-American ornithology expedition to Madagascar, and with Willoughby Low, who was official collector for the British Museum. Webb obtained Hottentot Teal *Anas punctata*, Meller's Duck *A. melleri*, Red-billed Teal *A. erythrorhyncha*, Fulvous Whistling Duck *Dendrocygna bicolor*, White-faced Whistling Duck *D. viduata*, Madagascar Pochard, which he stated was confined to Lake Alaotra and, White-backed Duck *Thalassornis leuconotus* which, he wrote, was the most difficult to get.

In 1935 Webb left Madagascar for England with African Pygmy Geese *Nettapus auritus*, Hottentot Teal, Madagascar Pochard, Meller's Duck, Red-billed Teal, White-backed Duck, "Cuvier's Rail *Dryolimnas cuvieri*" - presumably the present day White-throated Rail *Canirallus cuvieri* - Madagascar Bee-eater *Merops superciliosus* and other birds. On the way home the boat stopped at Anjouan, one of the Comoro Islands, where Cecil Webb took the opportunity to go ashore and, with only an hour to spare, managed to catch a male Anjouan Sunbird *Nectarinia comorensis*, the first of its kind ever to be collected alive.

## PACIFIC PARROTS APPEAL

"The beautiful islands of the Pacific have long captured our imaginations with visions of palm trees, brilliantly plumaged birds, abrupt mountains plunging steeply down to white sands and balmy jewel-toned waters. They are home to spectacular species that exist nowhere else, including one quarter of the world's globally threatened birds. But beneath the pretty picture a life and death battle is being waged with a long-standing enemy of island-nesting birds: the black rat", so reads the opening paragraph of BirdLife International's 2006 Pacific Parrots Appeal.

It is appealing for help to save several small parrot species such as Kuhl's or the Rimatara Lorikeet *Vini kuhlii*, Ultramarine Lorikeet *V. ultramarina* and Uvea Parakeet *Eunymphicus uvaensis* (of which fewer than 750 survive). Such species are confined to only one or a few islands, which makes them extremely vulnerable to extinction.

Money raised by the appeal will enable the BirdLife International Partnership to translocate Kuhl's or Rimatara Lorikeets from Rimatara in French Polynesia to rat-free Atiu, one of the southern Cook Islands. It will also enable BirdLife International to train staff of local organisations in the techniques of eradicating rats. It has plans to reintroduce other threatened species onto suitable islands once the rats have been eradicated. It also wants to strengthen prevention measures against the invasion of Black Rats *Rattus rattus* onto other islands which are the last refuge of endangered parrots and other species.

Donations in pounds sterling, euros or US dollars (cheques should be made payable to BirdLife International or in the case of the latter to American Friends of BirdLife International, Inc.) can be sent to: 2006 Pacific Parrots Appeal, BirdLife International, Wellbrook Court, Girton Road, Cambridge CB3 0NA, UK. Fax: +44 (0)1223 277200.

\* \* \*

## MISSING MAGAZINES

It is believed that some copies of the *Avicultural Magazine* Vol.112, No.3, may have gone astray in the post. If you did not receive that issue, please notify the Hon. Secretary/Treasurer, Paul Boulden, whose addresses, both postal and e-mail, can be found on the inside cover and at the foot of p173.

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## A VERY ENCOURAGING RESULT

Gouldian Finch *Erythrura gouldiae* surveys are conducted annually at Mornington Station in the Kimberley, northern Western Australia (see News & Views Vol.112, No.1, p.48 (2006)) and form a vital part of the monitoring programme, which includes gauging the effects of changing management regimes on the flora and fauna. This year's surveys were conducted over a week around designated waterholes along four watercourses where seed-eating species using the waterholes during a two-hour period were counted. All participants observed Gouldians at some stage over the course of the field work, and some were lucky enough to see over 100 during their surveys.

Although fewer were counted than in 2005, it is thought that they have again increased on the property. In 2005 there was little water available and the birds were concentrated around it, making them easier to count, but this year was wetter and they were widely dispersed. Despite this, only a few hundred fewer birds were seen. Other species encountered included Peaceful Doves *Geopelia placida*, Pectorella Mannikins *Heteromunia pectoralis* (in large numbers), Long-tailed Grassfinches *Peophila acuticauda* and Double-barred or Bicheno Finches *Tæniopygia bichenovii*.

\* \* \*

## HABITAT CONSERVATION AND CAPTIVE BREEDING

The latest Gouldian Finch *Erythrura gouldiae* news is reported in *Wingspan* Vol.16, No.4, p.6, December 2006, published quarterly by Birds Australia. It is followed by news of some of the media coverage there of the Orange-bellied Parrot/Parakeet *Neophema chrysogaster*. Earlier in the year, the Federal Minister for the Environment and Heritage, declined approval for a wind farm in Victoria, because of how it might affect the Orange-bellied Parrot/Parakeet, which has a known population of only 150 or so birds.

Later he announced that the Australian Government would allocate A\$3.2 million (approx. £1.2 million or US\$2.2 million) to the Orange-bellied Parrot recovery effort over two years, focusing on habitat conservation and captive breeding. He also elevated the species' official conservation status to Critically Endangered. The would-be wind farm developer also offered A\$750,000 (approx. £300,000 or US\$570,000) to the recovery effort.



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